

Remarks

Reconsideration and allowance of this application, as amended, are respectfully requested.

The written description portion of the specification, the claims, and the abstract of the disclosure have been amended. New claims 11-15 have been added. Claims 1-15 are now pending in the application. Claims 1 and 11 are independent. The rejections are respectfully submitted to be obviated in view of the amendments and remarks presented herein. No new matter has been introduced through the foregoing amendments.

The specification has been editorially amended for conformance with 37 CFR § 1.77(c). The abstract has been editorially amended for conformance with 37 CFR § 1.72(b).

Claims 1-10 have been amended to more fully comply with U.S. practice, including, *inter alia*, being converted from "use" format to apparatus format. Accordingly, new *method* claims 11-15 have been added to further define the scope of protection sought for Applicant's invention.

Claim 1 has also been amended to even more particularly define certain structural features of each separator, namely the inlet guide vane and the inner cylinder. Instant claim 1 specifies in pertinent part that the separator includes "an inner concentric wall formed as a cylinder placed in the upper part of the separator tank leaving an open space between said cylinder and a top of the separator tank, and leaving a space between said

cylinder and a bottom of the separator tank." In addition, claim 1 specifies that the separator includes "an inlet guide vane located between the separator tank and the inner cylinder leaving an open space between the inner cylinder and the inlet guide vane."

Entry of each of the amendments is respectfully requested.

35 U.S.C. § 103(a) - WO '965 and Weingarten

Claims 1, 2, and 5-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 02/41965 (hereinafter "WO '965") further in view of U.S. Patent No. 5,570,744 to Weingarten et al. ("Weingarten").

The Office Action asserts in pertinent part that "WO '965 discloses every aspect of claim 1, (see fig. 3) except the use of 'at least two separators'" and that "[t]he use of plural centrifugal based oil/water/gas separators (either in series or parallel [11,17+]) at the well head of a petroleum well is taught by Weingarten '744" (Office Action page 2).

The rejection of claims 1, 2, and 5-10 under § 103(a) as being unpatentable over WO '965 and Weingarten is respectfully deemed to be obviated. For at least the following reasons, the combined disclosures of WO '965 and Weingarten would not have rendered obvious Applicant's presently claimed invention.

As indicated above in the introductory remarks, instant claim 1 specifies in pertinent part that the separator includes "an inner concentric wall formed as a cylinder placed in the upper part of the separator tank *leaving an open space between said cylinder and a top of the separator tank*, and leaving a space between said cylinder and a bottom of the separator tank." In addition, claim 1 specifies that the separator includes "an inlet guide vane located between the separator tank and the inner cylinder *leaving an open space between the inner cylinder and the inlet guide vane*." (Emphasis added in both.)

Applicant respectfully submits that there is simply no teaching in WO '965 and Weingarten that would have led one to select the references and combine them, let alone in a way that would result in the invention defined by instant claim 1.

According to WO '965, the combined degassing and flotation tank is for the treatment (i.e., polishing) of an outgoing water stream separated from an initial separation of the stream flowing from the well head, or separated from subsequent separators removing further water from the crude oil (see WO '965 specification page 1, first two paragraphs under "Background for the invention"). Thus, WO '965's degassing and flotation tank is for water treatment, and remaining oil and gas are removed from the outgoing water phase (specification page 4 at bottom). According to WO '965, the inlet to the tank is an inlet for water (specification page 7, line 29 onwards; page 8, line 11; page 10,

lines 30-32; and page 16, lines 13-14). The graph in WO '965's Figure 4 shows incoming water having about 100 ppm hydrocarbons in the incoming water.

Applicant respectfully disagrees with the Office Action's assertion that WO '965 discloses every aspect of claim 1 except the use of "at least two separators." It is important that claim 1 specifies the use of at least two separators of a specific type *for initial separation* at the well of fluid from an oil and gas reservoir. Such a use is not disclosed in WO '965, nor is the use of at least two separators of the type defined in claim 1.

Applicant also respectfully disagrees with the Office Action's assertion that "it stands to reason that as a well head ages the well head fluid approaches the composition of water already being treated in WO '965" (Office Action page 2). The problem with aging oil fields has already been considered in WO '965 (specification page 2, second paragraph), and consequently, WO '965 teaches that the combined degassing and flotation tank is utilized for treating the produced water separated from the separation of the crude oil/water/gas mixture flowing from the well head. Applicant submits that aging of an oil field to the point where the primary outflow from the well head has a composition corresponding to the composition of the water separated from the flow from an already aged oil field is not an oil field in actual production.

The Office Action relies upon the disclosure of Weingarten to rectify the deficiencies of WO '965. Weingarten discloses a spiral baffle type separator utilized in the separation of the primary flow from an oilfield. Weingarten teaches the type of separator used for the aforementioned type of separation. Although Weingarten discloses the use of several separators used in series, such a configuration has already been recognized in WO '965 (i.e., see specification page 1, lines 23-25: "the crude oil still containing some gas and water is treated in one or *more* separators to remove more water and gas before the crude oil is ready for refining" (emphasis added)), without any reflection on using the combined degassing and flotation tank of WO '965 for this separation. There is a perfectly sound reason for this.

Weingarten's separators are of the auger type, in which the mixture from the well head is caused to flow in a plug-type separator. There is *no back flow* within the auger type separator, and Weingarten teaches that the initial separation must take place in the aforementioned type of separator. The spiral or helical type of baffle extends to the inside of the tubular casing of the separator and thus prevents back flow. See Weingarten's disclosure at column 5, lines 18-20: "the term spiral as used herein is to denote that the flow direction is progressively along the axis"; at column 5, lines 29-31: "the radial extremities of the helical flights 62 and 64 are preferably contiguous with the inner wall of the casing", and in all embodiments depicted in the drawings, and

in particular Figure 4, where a change in inner diameter is seen to necessitate the use of two different spiral diameters, thus ensuring plug-type flow throughout the length of the separator.

That is not Applicant's claimed invention. The separators according to the present invention are of a basically different type, in which plug-type flow is not possible. There is an open space between the inner cylinder and the inlet guide vane, and within this space back-flow can occur, and the same applies to the space within the inner concentric wall.

Applicant respectfully submits that the Office Action's reliance on combining the disclosures of WO '965 and Weingarten constitutes an *improper* hindsight reconstruction on the part of the examiner. The hindsight reconstruction is *improper* because it depends upon *the disclosure of the instant application*.

Therefore, the combined disclosures of WO '965 and Weingarten would not have rendered obvious the invention defined by claim 1. Claims 2 and 5-10 are allowable because they depend, either directly or indirectly, from claim 1, and for the subject matter recited therein.

35 U.S.C. § 103(a) - WO' 965, Weingarten, and Bibaeff

Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the prior art as applied to claim 1, and further in view of U.S. Patent No. 4,800,025 to Bibaeff.

The rejection of claims 3 and 4 under § 103(a) as being unpatentable over WO' 965, Weingarten, and Bibaeff is also respectfully deemed to be obviated.

Claim 1 is allowable over the WO'965/Weingarten combination for at least the reasons explained above. Claims 3 and 4 each depend from claim 1. Regardless of what Bibaeff may disclose with regard to the use of natural gas as a flotation gas, that teaching alone adds nothing that would rectify any of the above-described deficiencies of the WO '965/Weingarten combination.

New claims 11-15 have been added to further define the scope of protection sought for Applicant's invention. Claim 11 defines "a method of initial separation of fluid from an oil and gas reservoir at a well head" using the system defined in claim 1. Claims 12-15 are allowable because they depend from claim 11, and for the subject matter recited therein.

In view of the foregoing, this application is now in condition for allowance. If the examiner believes that an

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interview might expedite prosecution, the examiner is invited to
contact the undersigned.

Respectfully submitted,

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